

Delta Environmental Consulting

Special points of interest:

- Delta Environmental Consulting recognized at the SA FBA awards



Inside this issue:

From the desk with a view	1
Managing <i>T. flabelliformis</i> at Arno Bay	1
New book—"Natural History of Gulf St Vincent"	2
Modelling vegetation change	2
Family Business of the Year Awards (SA)	3
Writing as a team sport...	3
'Salties' get together at Great Salt Lake	4

From the desk with a view...

Where has this year gone? It started with a rush as Renae Eden and I headed north to Broken Hill to conduct a flora survey as part of the Environmental Impact Studies for Perilya's proposed Flying Doctor zinc mine. The weather was hot, the flora was fascinating and we took a detour on our way home to Silverton, where Renae became acquainted with the town's resident donkeys.

Not long after returning to Adelaide Renae was approached to take on a position at Adelaide Airport. She accepted, and while we all miss her cheerful nature round the St Kilda office we are thrilled to see her career flourishing in her new environment.

The month of May saw Jen Coleman accepting an award on Delta's behalf from Family Business Australia—Delta was awarded the FBA Award for 2008, for a first generation South Australian business. And where was I? In the USA with Faith Cook and baby Daniel attending the triennial International Society for Salt Lake Research conference on the shores of the Great Salt Lake in Utah. It was a fascinating few weeks. There is more on both of these stories inside...



Silverton's donkeys are real traffic stoppers

Nature abhors a vacuum, and the holes in our staff were quickly filled. Matthew Cook, who provides us with IT support on a contract basis, was between jobs in the middle of the year and joined us for a couple of months to work on the installation of leak-detection telemetry for the Tintinara Land and Water Management Plan. Breanne Taylor has taken up a part-time role, providing us with sorely needed administrative, personnel and field support.

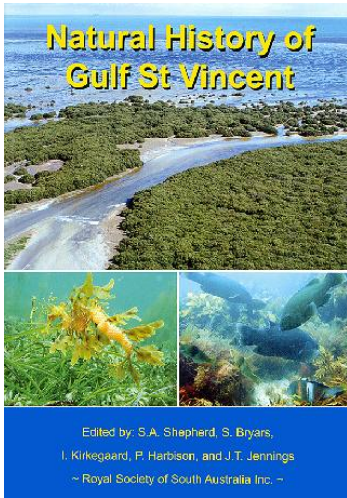
Technology allows consultants to undertake an incredible diversity of research for their clients, and Delta is always on the lookout for new technology that will make it possible for us to do more. This year we leapt from ink-jet printing of large format pages into the colour laser era. Another major acquisition this year was the purchase of an upgraded version of our Geographic Information System software, TNTmips. Faith is able to offer clients an extremely powerful set of tools with which to analyze their geographic data. Look inside for a recent project Delta completed using the new software.

Well, that's it from me — Have a lovely festive season!

Peri Coleman

Managing *Tecticornia flabelliformis* at Arno Bay

Early March was unseasonably hot out on the mud flats at Arno Bay on the Eyre Peninsula, but the team was just thankful that the weather was dry—mapping the endangered samphire, *Tecticornia flabelliformis*, on wet mud pans would have been more than a challenge! The exercise was conducted as part of the Arno Bay Progress Association's stewardship of a large area of coastal playa. The Progress Association is assisted in its management of this Heritage Agreement land by the Eyre Natural Resource Management Board. Delta mapped all the vegetation associations on the land and identified threats and management actions.



Cover of the Royal Society of SA's recent addition to the "Natural History" series

New book – “Natural History of Gulf St Vincent”

Delta’s principal consultant, Peri Coleman, co-authored (with Doug Fotheringham from the Coastal Management Branch of the Department for Environment and Heritage) a chapter about salt marshes in the Royal Society of South Australia’s recent publication, the “Natural History of Gulf St Vincent”. Containing 38 chapters and written by 58 contributors the book spans topics as diverse as the geological history and oceanography of the Gulf, the waters, cliffs, rocky reefs and high-energy beaches, the extensive shallow seagrass beds, the mangroves and samphire-dominated salt marshes that edge the Gulf, the microscopic foraminifera of the Gulf’s open waters, microbial activity of mangrove muds, and the various types of marine life found here - the crustaceans, cephalopods, fish, marine mammals and seabirds, including the migratory waders that come to the Gulf to escape the winters of Siberia and Alaska.

Chapters within the book provide a historical perspective of human activities that have impacted the Gulf, from the fish traps of the Aboriginal inhabitants through the American and European sealers and whalers, to past and current urban and industrial coastal zone development that has alienated much coastal habitat, particularly around the Barker Inlet/Port River Estuary, the Gulf’s largest fish nursery and that has led to the loss of seagrass off the metropolitan coast. The ongoing impacts of the invasion of exotic marine pests and the disturbance of coastal acid sulphate soils by inappropriate developments are also presented.

The “Natural History of Gulf St Vincent”, is, according to chief editor Dr Scoresby Shepherd: "quite simply ... the definitive work on the Gulf ... for at least the next 30 years".

“The lowest lying parts of the site...will continue to support halotolerant sedges, rushes and reeds”

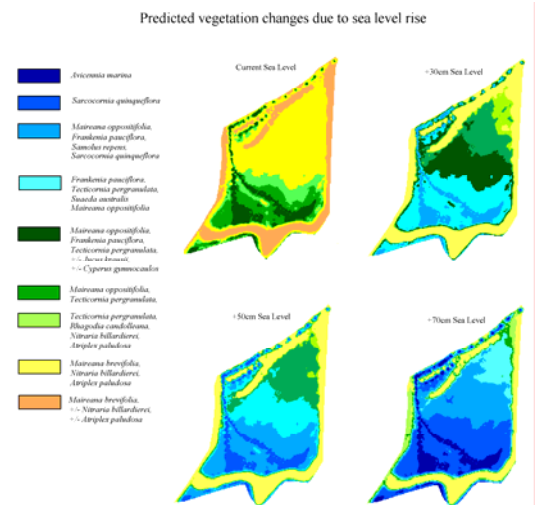
Modelling vegetation change

Relative sea-level changes (a combination of actual sea-level change and land subsidence) in the Barker Inlet area has caused landward progradation of mangrove across saltmarsh communities at the estuary of the Little Para. The Urban Biodiversity Unit (UBU) of the Department for Environment and Heritage undertook remediation works over several years to provide an area for saltmarsh retreat. To assess the success of the works, UBU approached Delta Environmental Consulting to determine the current, and possible future inundation patterns of the tides into the remediated area.

After field work, conducted during high spring tides, Faith Cook developed a predictive digital elevation model for the site using TNTmips software. Natural surface elevations across the site varied from 1.6m AHD (Australian Height Datum) in the southernmost part of the site to 2.4m in the north eastern part of the site. As the slope of the site falls away from the river, drains had been cut across the site, and these vary from 1.15m up to 1.5m. The presence of levees, embankments and ‘bars’ in the river west of the site complicated the tidal frequency modelling.

Since the initial levee removal in 2005, the site has shown some vegetation changes. These changes are likely to continue for some years, and will reflect the additional water supply, both marine and floodwater-derived. Currently tides enter the site once they exceed 1.6 m AHD. As a result, the lowest lying parts of the site will be more affected by the input of fresh floodwaters from the river than they would be otherwise, and will continue to support halotolerant sedges, rushes and reeds.

Additional scenarios were developed that estimate the ultimate impacts of an additional 30 cm, 50 cm and 70 cm of average sea level. Once the inundation patterns were established for each scenario, the distribution of perennial vegetation species for each scenario was developed using information derived from field studies conducted in neighbouring parts of Barker Inlet.



Habitat change with differing seawater inundation frequencies

Family Business of the Year Awards (SA)

Three very different family businesses topped their respective generational categories at the recent 2008 South Australian Family Business of the Year Awards.

Delta Environmental Consulting won in the 1st generation category, local ISP Adam Internet was awarded the 2nd generation category and Oliver's Taranga Vineyards collected 4th generation and beyond category.

Delta is classed as a first generation business because the founding generation is still actively involved in the day-to-day running of the business. As a first generation entry, the judges were looking for evidence of the business having formal management systems including a succession plan for the eventual transfer of the business to the next generation. Faith Cook prepared the entry using Delta's QBase-certified management system as her first point of reference.

As both Faith Cook and Peri Coleman were overseas when the award was announced, Jen Coleman swung into action, attending the presentation dinner and speaking on behalf of all family members involved in the business.

A DVD presentation highlighting the services Delta provides to their clients and showing all the team at work in their normal settings (habitats?) was prepared for display at the national FBA Conference in Cairns, held in August. It was a real thrill seeing all the girls' faces flashing up on the big screen, especially in the company of other iconic South Australian family businesses such as Haigh's Chocolates, Bremerton Wines and Michel's (woolen manufacturers).

Writing as a team sport...

Can you imagine a free textbook on a very specialised subject, written by a co-operative of authors, constantly up-dated to reflect the latest knowledge in that field? That would be a Wikibook... Wikibooks form a free collection of open-content, on-line textbooks including annotated texts, instructional guides, and manuals that anyone can edit. The books are all released under a free content license.

Textbooks are started by people who are familiar with the subject and content is continually augmented by other Wikiauthors. The "Methods Manual for Salt Lake Studies" is a germinating Wikibook. The Manual is the result of discussions at the 10th International Society for Salt Lake Research (ISSLR) triennial conference, held on the shores of Great Salt Lake in Utah in 2008. Log into <http://www.isslr.org> to find out more about ISSLR.

Salt lakes provide an excellent opportunity to study systems that are relatively unstudied. The unique features of these lakes - the arid environments in which they occur, the varied ionic composition of their brines, and the ephemerality of many of these lakes, provide challenges for the researcher.

Methods developed for use in freshwater environments may not provide usable, or reliable, results in saline systems. Many analyses require dilution of samples to reduce salt effects, and this reduces the sensitivity of the analyses, sometimes to the point of uselessness. The challenges of measuring the characteristics of saline and hypersaline systems have been addressed by many authors over the years, however the modified methods they have proposed are scattered throughout the literature.

It is hoped that this new manual will provide researchers and students of salt lakes with a comprehensive reference to methods used in salt lake studies. Anyone wishing to contribute to the Wikibook project should log onto http://en.wikibooks.org/wiki/Methods_Manual_for_Salt_Lake_Studies and have a look around to see where they could contribute.

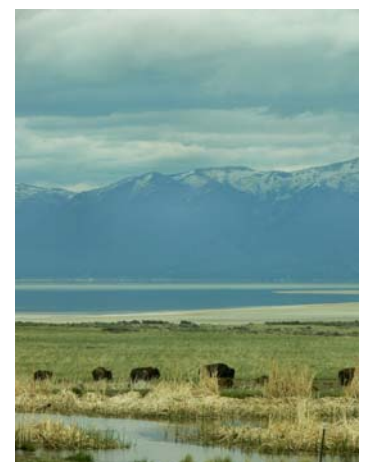
Remember, perfection is not required! One of the great advantages of the wiki system is that incomplete drafts can evolve into polished works through the process of collaborative editing. Random collections of facts and notes, graphics that illustrate a point concisely, silky editing—all are welcome.

So, be bold and use your best judgment in making changes, adding and removing content and starting discussions in the Manual!



Jen Coleman accepting the 2008 FBA Award

“So, be bold and use your best judgment...”



Bison graze on the shore of Great Salt Lake



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Wet? Salty? Arid? Muddy? Our element...

Delta Environmental Consulting is an independent South Australian consulting business. We offer services including sampling, monitoring and discharge monitoring programmes for waterways, tidal areas, saline lakes and wetlands, assessment of revegetation projects, flora and fauna biodiversity surveys of terrestrial, shallow aquatic (fresh, brackish and haline) and stygian habitats, site environmental surveys, evaporation basin modelling, GIS habitat change assessments, land use histories, enterprise carbon footprinting, compliance audits and research programs.

Delta Environmental Consulting has a policy of continuous improvement in the areas of :

- Providing a quality product to our clients,
- Providing ongoing training and development opportunities for our consultants (we have InSkill SA certification),
- Maintaining high standards in the areas of health, safety and the environment both within Delta and while working with our clients.

Delta Environmental Consulting's quality assurance management system has been third party certified to the international Q-base standard by Standards Australia. A copy of the scope of certification is available on request.

Delta is proud to be associated with the Water Industry Alliance

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“Salties” get together at Great Salt Lake

The 10th International Conference on Salt Lake Research (ISSLR X) was held in Salt Lake City, Utah, USA, over the period May 11-16 in 2008. The conference showcased recent microbial research in saline environments, bird use of salt lakes, and a number of presentations on chemical measurements in salt lakes.

Peri Coleman, Faith Cook and baby Daniel flew over to the conference and stayed at historic Fort Douglas on the campus of the University of Utah. Delta Environmental Consulting was presenting a poster on 'low-tech' monitoring approaches for use in solar saltfields where the biological 'health' of the ponds may impact on the quality of salt produced.

The biennial Great Salt Lake Issues Forum sponsored by the Friends of Great Salt Lake was held jointly with the ISSLR conference, providing a stimulating mix of scientists, environmental groups, local land managers and government agencies with a common interest in the conservation and scientific management of saline lake ecosystems. Papers on the recent changes to the salinity of the Great Salt Lake and the impacts of sewage discharge and heavy metal contamination in the Lake provided a strong local interest to the proceedings, which were reported widely in the Utah press.

The four days of papers and poster presentations were broken up by pre-, mid- and post-conference tours to the Great Salt Lake and Antelope Island, while in the evenings salt lake art, photography and music exhibitions provided us with a different way of looking at salt lakes.

Typical Utah spring weather (snow one day, 37°C the next) greeted the conference delegates, but young Daniel happily dabbled his toes in the hypersaline waters of the Lake, played in the strange oolitic sand, and snoozed in his Mum's backpack as she dug up gypsum lenticels from the sulphurous mud.



ISSLR scientists getting their feet wet